AMENDMENTS TO THE CLAIMS

1-49 (canceled)

50. (Currently Amended) A signal transmission apparatus for transmitting a first data stream and a second data stream, said signal transmission apparatus comprising:

a first error correction code (ECC) encoder operable to BCH encode the first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

a second error correction code (ECC) encoder operable to Reed-Solomon encode the second data stream to produce an ECC encoded second data stream;

a modulator operable to modulate the ECC encoded first data stream according to an m-level PSK and to modulate the ECC encoded second data stream according to an n-level PSK to produce modulated signals;

an inverse Fast Fourier transformer (IFFT) operable to convert the modulated signals into IFFT converted signals; and

a transmitter operable to transmit the IFFT converted signals.

51. (Previously Presented) A signal transmission apparatus according to claim 50, wherein m is less than or equal to 4.

52. (Previously Presented) A signal transmission apparatus according to claim 50, wherein n is greater than or equal to 4.

53. (Previously Presented) A signal transmission apparatus according to claim 50, wherein m is less than or equal to 4 and n is greater than or equal to 4.

54. (Currently Amended) A signal transmission apparatus for transmitting a first data stream and a second data stream, said signal transmission apparatus comprising:

a first error correction code (ECC) encoder operable to BCH encode the first data stream to produce an ECC encoded first data stream , wherein the first data stream has data for demodulation for demodulating the second data stream;

a second error correction code (ECC) encoder operable to Reed-Solomon encode the second data stream to produce an ECC encoded second data stream;

a modulator operable to modulate the ECC encoded first data stream according to an m-level QAM and to modulate the ECC encoded second data stream according to an n-level QAM to produce modulated signals;

an inverse Fast Fourier Transformer (IFFT) operable to convert the modulated signals into IFFT converted signals; and

a transmitter operable to transmit the IFFT converted signals.

55.   (Previously Presented) A signal transmission apparatus according to claim 54, wherein m is less than or equal to 4.

56.   (Previously Presented) A signal transmission apparatus according to claim 54, wherein n is greater than or equal to 4.

57.   (Previously Presented) A signal transmission apparatus according to claim 54, wherein m is less than or equal to 4 and n is greater than or equal to 4.

58.   (Currently Amended) A signal receiving apparatus comprising:

a Fast Fourier Transformer (FFT) operable to convert an input signal into a FFT converted signal;

wherein the input signal has information of a first data stream and a second data stream, both of which the first data stream has data for demodulation for demodulating the second data stream, both of the first and second data streams are ECC encoded, said ECC encoded first data stream is

modulated according to an m-level PSK, said ECC encoded second data stream is modulated according to an n-level PSK;

a demodulator operable to demodulate the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

a first error correction code (ECC) decoder operable to BCH decode the first demodulated data steam to produce the first data stream; and

a second error correction code (ECC) decoder operable to Reed-Solomon decode the second demodulated data stream to produce the second data stream.

59.   (Previously Presented) A signal receiving apparatus according to claim 58, wherein m is less than or equal to 4.

60.   (Previously Presented) A signal receiving apparatus according to claim 58, wherein n is greater than or equal to 4.

61.   (Previously Presented) A signal receiving apparatus according to claim 58, wherein m is less than or equal to 4 and n is greater than or equal to 4.

62.   (Currently Amended) A signal receiving apparatus comprising:

a Fast Fourier Transformer (FFT) operable to convert an input signal into a FFT converted signal;

wherein the input signal has information of a first data stream and a second data stream, ~~both of which~~ the first data stream has data for demodulation for demodulating the second data stream, both of the first and second data streams are ECC encoded, said ECC encoded first data stream is modulated according to an m-level QAM, said ECC encoded second data stream is modulated according to an n-level QAM;

a demodulator operable to demodulate the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

a first error correction code (ECC) decoder operable to BCH decode the first demodulated data steam to produce the first data stream; and

a second error correction code (ECC) decoder operable to Reed-Solomon decode the second demodulated data stream to produce the second data stream.

63. (Previously Presented) A signal receiving apparatus according to claim 62, wherein m is less than or equal to 4.

64. (Previously Presented) A signal receiving apparatus according to claim 62, wherein n is greater than or equal to 4.

65. (Previously Presented) A signal receiving apparatus according to claim 62, wherein m is less than or equal to 4 and n is greater than or equal to 4.

66. (Currently Amended) A signal transmission system comprising a signal transmission apparatus and a signal receiving apparatus,

said signal transmission apparatus comprising:

a first error correction code (ECC) encoder operable to BCH encode the first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

a second error correction code (ECC) encoder operable to Reed-Solomon encode the second data stream to produce an ECC encoded second data stream;

a modulator operable to modulate the ECC encoded first data stream according to an m-level PSK and to modulate the ECC encoded second data stream according to an n-level PSK to produce modulated signals;

an inverse Fast Fourier transformer (IFFT) operable to convert the modulated signals into IFFT converted signals; and

a transmitter operable to transmit the IFFT converted signals;

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said signal receiving apparatus comprising:

a Fast Fourier Transformer (FFT) operable to convert the transmitted IFFT converted signals into a FFT converted signal;

a demodulator operable to demodulate the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

a first error correction code (ECC) decoder operable to BCH decode the first demodulated data steam to produce the first data stream; and

a second error correction code (ECC) decoder operable to Reed-Solomon decode the second demodulated data stream to produce the second data stream.

67.   (Previously Presented) A signal transmission system according to claim 66, wherein m is less than or equal to 4.

68.   (Previously Presented) A signal transmission system according to claim 66, wherein n is greater than or equal to 4.

69.   (Previously Presented) A signal transmission system according to claim 66, wherein m is less than or equal to 4 and n is greater than or equal to 4.

70.   (Currently Amended) A signal transmission system comprising a signal transmission apparatus and a signal receiving apparatus,

said signal transmission apparatus comprising:

a first error correction code (ECC) encoder operable to BCH encode the first data stream to produce an ECC encoded first data stream , wherein the first data stream has data for demodulation for demodulating the second data stream;

a second error correction code (ECC) encoder operable to Reed-Solomon encode the second data stream to produce an ECC encoded second data stream;

a modulator operable to modulate the ECC encoded first data stream according to an m-level QAM and to modulate the ECC encoded second data stream according to an n-level QAM to produce modulated signals;

an inverse Fast Fourier transformer (IFFT) operable to convert the modulated signals into IFFT converted signals; and

a transmitter operable to transmit the IFFT converted signals;

said signal receiving apparatus comprising:

a Fast Fourier Transformer (FFT) operable to convert the transmitted IFFT converted signals into a FFT converted signal;

a demodulator operable to demodulate the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

a first error correction code (ECC) decoder operable to BCH decode the first demodulated data steam to produce the first data stream; and

a second error correction code (ECC) decoder operable to Reed-Solomon decode the second demodulated data stream to produce the second data stream.

71. (Previously Presented) A signal transmission system according to claim 70, wherein m is less than or equal to 4.

72. (Previously Presented) A signal transmission system according to claim 70, wherein n is greater than or equal to 4.

73. (Previously Presented) A signal transmission system according to claim 70, wherein m is less than or equal to 4 and n is greater than or equal to 4.

74. (Currently Amended) A signal transmission method for transmitting a first data stream and a second data stream, said method comprising:

BCH error correction code (ECC) encoding the first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

Reed-Solomon error correction code (ECC) encoding the second data stream to produce an ECC encoded second data stream;

modulating the ECC encoded first data stream according to an m-level PSK and modulating the ECC encoded second data stream according to an n-level PSK to produce modulated signals;

converting the modulated signals into an IFFT converted signal; and

transmitting the IFFT converted signal.

75.   (Previously Presented) A signal transmission method according to claim 74, wherein m is less than or equal to 4.

76.   (Previously Presented) A signal transmission method according to claim 74, wherein n is greater than or equal to 4.

77.   (Previously Presented) A signal transmission method according to claim 74, wherein m is less than or equal to 4 and n is greater than or equal to 4.

78.   (Currently Amended) A signal transmission method for transmitting a first data stream and a second data stream, said method comprising:

BCH error correction code (ECC) encoding the first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

Reed-Solomon error correction code (ECC) encoding the second data stream to produce an ECC encoded second data stream;

modulating the ECC encoded first data stream according to an m-level QAM and modulating the ECC encoded second data stream according to an n-level QAM to produce modulated signals;

converting the modulated signals into an IFFT converted signal; and

transmitting the IFFT converted signal.

79.   (Previously Presented) A signal transmission method according to claim 78, wherein m is less than or equal to 4.

80.   (Previously Presented) A signal transmission method according to claim 78, wherein n is greater than or equal to 4.

81.   (Previously Presented) A signal transmission method according to claim 78, wherein m is less than or equal to 4 and n is greater than or equal to 4.

·82.   (Currently Amended) A signal receiving method comprising:

converting an input signal into a FFT converted signal;

wherein the input signal has information of a first data stream and a second data stream, ~~both of which~~ the first data stream has data for demodulation for demodulating the second data stream, both of the first and second data streams are ECC encoded, the ECC encoded first data stream is modulated according to an m-level PSK, the ECC encoded second data stream is modulated according to an n-level PSK;

demodulating the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

BCH error correction code (ECC) decoding the first demodulated data stream to produce the first data stream; and

Reed-Solomon error correction code (ECC) decoding the second demodulated data stream to produce the second data stream.

83.   (Previously Presented) A signal receiving method according to claim 82, wherein m is less than or equal to 4.

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84.	(Previously Presented) A signal receiving method according to claim 82, wherein n is greater than or equal to 4.

85.	(Previously Presented) A signal receiving method according to claim 82, wherein m is less than or equal to 4 and n is greater than or equal to 4.

86.	(Currently Amended) A signal receiving method comprising:

converting an input signal into a FFT converted signal;

wherein the input signal has information of a first data stream and a second data stream, ~~both of which~~ the first data stream has data for demodulation for demodulating the second data stream, both of the first and second data streams are ECC encoded, the ECC encoded first data stream is modulated according to an m-level QAM, the ECC encoded second data stream is modulated according to an n-level QAM;

demodulating the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

BCH error correction code (ECC) decoding the first demodulated data stream to produce the first data stream; and

Reed-Solomon error correction code (ECC) decoding the second demodulated data stream to produce the second data stream.

87.	(Previously Presented) A signal receiving method according to claim 86, wherein m is less than or equal to 4.

88.	(Previously Presented) A signal receiving method according to claim 86, wherein n is greater than or equal to 4.

89.	(Previously Presented) A signal receiving method according to claim 86, wherein m is less than or equal to 4 and n is greater than or equal to 4.

90.   (Currently Amended) A signal transmission and receiving method comprising a signal transmission method and a signal receiving method,

said signal transmission method comprising:

BCH error correction code (ECC) encoding a first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

Reed-Solomon error correction code (ECC) encoding a second data stream to produce an ECC encoded second data stream;

modulating the ECC encoded first data stream according to an m-level PSK and modulating the ECC encoded second data stream according to an n-level PSK to produce modulated signals;

converting the modulated signals into an IFFT converted signal; and

transmitting the IFFT converted signal;

said signal receiving method comprising:

converting the transmitted IFFT converted signal into a FFT converted signal;

demodulating the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

BCH error correction code (ECC) decoding the first demodulated data stream to produce the first data stream; and

Reed-Solomon error correction code (ECC) decoding the second demodulated data stream to produce the second data stream.

91.   (Previously Presented) A signal transmission and receiving method according to claim 90, wherein m is less than or equal to 4.

92.   (Previously Presented) A signal transmission and receiving method according to claim 90, wherein n is greater than or equal to 4.

93.   (Previously Presented) A signal transmission and receiving method according to claim 90, wherein m is less than or equal to 4 and n is greater than or equal to 4.

94.   (Currently Amended) A signal transmission and receiving method comprising a signal transmission method and a signal receiving method,

said signal transmission method comprising:

BCH error correction code (ECC) encoding a first data stream to produce an ECC encoded first data stream, wherein the first data stream has data for demodulation for demodulating the second data stream;

Reed-Solomon error correction code (ECC) encoding a second data stream to produce an ECC encoded second data stream;

modulating the ECC encoded first data stream according to an m-level QAM and modulating the ECC encoded second data stream according to an n-level QAM to produce modulated signals;

converting the modulated signals into an IFFT converted signal; and

transmitting the IFFT converted signal;

said signal receiving method comprising:

converting the transmitted IFFT converted signal into a FFT converted signal;

demodulating the FFT converted signal to produce a first demodulated data stream and a second demodulated data stream;

BCH error correction code (ECC) decoding the first demodulated data stream to produce the first data stream; and

Reed-Solomon error correction code (ECC) decoding the second demodulated data stream to produce the second data stream.

95.   (Previously Presented) A signal transmission and receiving method according to claim 94, wherein m is less than or equal to 4.

96.   (Previously Presented) A signal transmission and receiving method according to claim 94, wherein n is greater than or equal to 4.

97.   (Previously Presented) A signal transmission and receiving method according to claim 94, wherein m is less than or equal to 4 and n is greater than or equal to 4.